SB761
.U7 N6 no. 71-2

US
FS
NR
Rept.
71-2

U.S. FOREST SERVICE

NORTHERN REGION

DIVISION OF STATE AND PRIVATE FORESTRY

INSECT AND DISEASE REPORT

Report No. 71-2

5230

PACIFIC FOREST
RESEARCH CENTRE

MAR 16 1972

VICTORIA, B.C.

POTENTIAL FOR PINE BUTTERFLY DEFOLIATION ON THE BITTERROOT AND LOLO NATIONAL FORESTS, MONTANA 1971

by

W. M. Ciesla, W. E. Bousfield & H. E. Meyer 1/

The pine butterfly, Neophasia menapia (F. & F.) is a coniferous defoliator which periodically reaches epidemic levels causing extensive defoliation and damage to ponderosa pine. Past records of epidemics indicate that heavy defoliation can result in up to 90% mortality in ponderosa pine forests (Cole 1966). In recent years, adult pine butterflies have been numerous enough in the Bitterroot Valley and in the vicinity of Missoula to arouse public attention. In 1970 larval populations caused some light defoliation. An egg survey was conducted during November and December 1970 in an attempt to forecast population trends for 1971.

Methods - The survey design was adapted from a method described by Cole (1956) using a 15 inch lateral branch as the basic sampling unit. Twenty sample plots were established in low elevation pure ponderosa pine stands on the Lolo and Bitterroot National Forests.

Ten sample trees were selected at each location and five branches were removed from each tree at mid-crown with pole pruners. Sample branches were placed in collecting bags (1 per tree) and returned to the laboratory where needles were examined for egg masses. Casual observations in the field indicated that egg masses were concentrated on the apical ends of the branch samples. Therefore, egg counts were made separately by 5 inch branch segments to obtain data about branch distribution of the eggs.

1/ Entomologists and Biological Technician, Forest Insect and Disease Branch.

Results and Discussion - Analysis of the 15 branch samples revealed that 71.35% of the eggs occurred on the apical 5 inch branch segment, 23.22% on the mid 5 inch segment and 5.43% on the basal 5 inch segment. Since over 70% of the eggs occurred on the apical 5 inch segment, this was used as the basic sampling unit.

Egg populations per 5 inch branch sample ranged from 0-46.96 with heaviest populations occurring in the Bass, Big, Blodgett and Cow Creek Drainages of the Bitterroot National Forest. Egg counts were relatively low on the Lolo National Forest with the exception of the South Fork Lolo, Rattlesnake and Grant Creek Drainages (Table 1). Cole (1956) reported that 10 or more eggs per 15 inch branch constituted an "epidemic" condition and 5 to 9 eggs a "heavy" infestation on the Boise National Forest in southern Idaho. However, it may not be valid to compare southern Idaho data with that collected in western Montana. An attempt will be made to correlate 1971 defoliation with these egg counts.

Results of this survey indicate that noticeable defoliation can be expected along the lower slopes of the Bitterroot Range from the South Fork Lolo Creek south to Hamilton and in the area immediately north of Missoula. No control work is planned for 1971.

Literature Cited

Cole, W.E., 1956. Surveys and control of the pine butterfly during an outbreak in southern Idaho 1953-1954, USDA Forest Service, INT Forest and Range Experiment Station, Ogden, Utah, Res. Note 30.

Cole, W.E., 1966. Effect of pine butterfly defoliation on Ponderosa Pine in southern Idaho. USDA Forest Service, INT Forest and Range Experiment Station. Ogden, Utah. Res. Note INT-46.

Table 1 - Mean number of pine butterfly eggs per 5 inch branch sample. Lolo and Bitterroot National Forests, Montana. December 1970.

Forest	Plot Location	Mean	S.E. of the Mean	Coefficient of variation
Bitterroot	Antrim Point	0.00	0.000	0.000
	Bass Creek	46.96	5.679	0.855
	Big Creek	34.76	4.038	0.8215
	Blodgett Creek	41.68	4.391	0.745
	Burnt Fork	3.32	0.904	1.925
	Carlton Creek	6.56	1.756	1.892
	Cow Creek	46.54	5.746	0.873
	Fred Burr Creek	5.64	1.618	2.029
	Lost Horse Creek	7.58	1.282	1.196
	Roaring Lion Creek	8.22	1.370	1.179
	Skalkaho Mtn.	7.78	1.384	1.259
Lolo	Bonner	0.00	0.000	0.000
	Blue Mountain	1.32	0.612	3.277
	Edith Creek	0.00	0.000	0.000
	Grant Creek	22.02	3.080	0.989
	Miller Creek	0.24	0.244	6.708
	Nine Mile Creek	0.26	0.159	4.313
	Rattlesnake Creek	16.00	2.180	0.964
	S. Fork Lolo Creek	14.94	2.214	1.048
	Upper Lolo Creek	0.26	0.260	7.071